

Appl. No. : **10/508,969**
Filed : **April 8, 2005**

REMARKS

Claim 1 has been amended by incorporating therein the limitation of Claim 9 and further clarifying the invention. Claim 9 has been canceled accordingly. No new matter has been added. Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-15 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Office action states: "Specifying a molecular weight of 2,500,000 or higher includes molecular weights above 4 million, which is not embodied in the Specification". Claim 1 has been amended to include the limitations of claim 9. Claim 1 as amended now recites, among others, "said amphoteric polyacrylamide having an average molecular weight of 2,500,000 to 4,000,000," thereby obviating this rejection.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 3-5, 7-8, and 10-15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Winiker (US5032226) as evidenced by Alfrey, Jr. et al ("Amphoteric Polyelectrolytes. II. Copolymers of Methacrylic Acid and Diethylaminoethyl Methacrylate" Journal of American Chemical Society, V.74 (1952) pp.438-441) and Alfrey, Jr. et al ("Preparation and Titration of Amphoteric Polyelectrolytes" Journal of Polymer Society, V23 (1957) pp.533-547).

Claim 1 is the only independent claim and has been amended by incorporating therein the limitations of Claim 9 which has not been rejected on this ground. Thus, this rejection is now moot.

Claim Rejections Under 35 U.S.C. § 102/§ 103(a)

Claims 1, 4-5, and 7-15 have been rejected under 35 U.S.C. § 102(a) as anticipated by or under 35 U.S.C. § 103(a) as obvious over Honig et al (US5167766) as evidenced by Alfrey, Jr. et al ("Amphoteric Polyelectrolytes. II. Copolymers of Methacrylic Acid and Diethylaminoethyl Methacrylate" Journal of American Chemical Society, V.74 (1952) pp.438-441) and Alfrey, Jr. et al ("Preparation and Titration of Amphoteric Polyelectrolytes" Journal of Polymer Society, V23 (1957) pp.533-547).

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Claim 1 is the only independent claim and has been amended to recites:

A bulky paper configured to be used in a printing paper, a recording paper, or a base paper for art paper, cast coated paper or high-grade coated paper, comprising amphoteric polyacrylamide blended in pulp, which has an electric charge of 2.0 m-equivalent/g or less and a positive potential at pH 2 and has an electric charge of 2.0 m-equivalent/g or less and a negative potential at pH 12,
said amphoteric polyacrylamide having an average molecular weight of 2,500,000 to 4,000,000 000 and blended in the pulp in an amount effective to improve paper bulkiness, paper strength, brightness, and opacity for the printing paper, the recording paper, or the base paper for art paper.

The Office action states: "[Honig et al discloses a process wherein] the high molecular weight synthetic polymer has a molecular weight from 100,000 to 25,000,000 and comprises from 0 to 99 mole percent acrylamide and from 1 to 100 mole percent anionic and cationic monomers (col 8, lines 23-32)." *Office action* at page 9, lines 11-14.

It is well established that if the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. The **unexpected results** may also render the claims unobvious." *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 999, 78 USPQ2d 1417, 1423 (Fed. Cir. 2006) (Emphasis added). In genus-species situations, a prior art species always anticipate a genus; however, a prior art genus does not always anticipate a species within the genus. In *In re Petering*, 301 F.2d 676, 133 USPQ 275 (CCPA 1962), the court held that a very small genus can be a disclosure of each species within the genus. However, here, the reasoning of *Petering* does not apply because (1) the polymer in Honig comprising from 0 to 99 mole percent acrylamide and from 1 to 100 mole percent anionic and cationic monomers covers a much broader range of electric charges than what is claimed (further, Honig merely states "their anionicity and/or cationicity may range..." (column 8, lines 26-28) without mentioning "amphoteric"), (2) the lower end of the molecular weight in Honig is 25 times smaller than what is claimed, (3) the upper end of the molecular weight in Honig is 6 times greater than what is claimed, and (4) no particular sub-genus or species are disclosed in Honig. Thus, Honig cannot anticipate the claimed ranges.

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Further, unexpected results are shown in the attached declaration. As described in ¶17 of the declaration, it is very surprising that when the average molecular weights of amphoteric polyacrylamides are within the claimed range, the density of the resultant paper can be decreased (i.e., the paper is bulky) whereas the breaking length of the paper can be increased (i.e., tension strength is high) despite the fact that the density is decreased, as compared with the cases where the average molecular weights are outside the claimed range. Further, as described in ¶18 of the declaration, it is very surprising that when the average molecular weights of amphoteric polyacrylamides are within the claimed range, despite the fact that the density of the resultant paper is decreased (i.e., the paper was bulky), the hunter opacity and hunter brightness can be increased, as compared with the cases where the average molecular weights are outside the claimed range. See also ¶19 of the declaration for significance of the values.

Thus, the unexpected results also render the claim unobvious. *Atofina v. Great Lakes Chem. Corp., Id.*

The Office action further states: "Although Honig et al discloses the use of the high molecular weight synthetic polymer for drainage and retention properties, it can simultaneously function to provide the other claimed properties." *Office action* at page 10, lines 1-3. However, Honig teaches in no way that the specific amphoteric polyacrylamide blended in pulp can improve both paper bulkiness and paper strength, brightness and opacity (normally mutually exclusive properties). Furthermore, claim 1 has been amended to recite that the specific amphoteric polyacrylamide is blended in the pulp in an amount effective to improve paper bulkiness, paper strength, brightness, and opacity for the printing paper, the recording paper, or the base paper for art paper. Thus, Honig cannot lead to the claimed invention. None of the Alfrey references is directed to paper.

At least for the reasons explained above, claim 1 cannot be obvious over Honig and the Alfrey references. The other grounds of rejection are now moot. At least for the same reasons, the remaining dependent claims also cannot be obvious over the references, and the rejections of these claims are moot.

Claim Rejections Under 35 U.S.C. § 103(a)

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Claims 2-4 and 6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Winiker or Honing et al, in view of Tashiro et al (4935097) and Schade et al (2002/0182379). Claim 1 is the only independent claim and has been amended by incorporating therein the limitations of Claim 9 which has not been rejected on this ground. Claims 2-4 and 6 depend from claim 1, and thus, at least for this reason, this rejection is now moot.

Response to Applicant's Argument

The Examiner's Response to Applicant's Argument in the Office action is now moot due to the amendment to claim 1 and the declaration.

CONCLUSION

In light of the Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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